



DEPARTMENT OF THE NAVY
NAVAL AIR SYSTEMS COMMAND
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IN REPLY REFER TO

NAVAIRINST 13034.1B
AIR-4.0P
24 Oct 00

NAVAIR INSTRUCTION 13034.1B

From: Commander, Naval Air Systems Command

Subj: FLIGHT CLEARANCE POLICY FOR MANNED AIR VEHICLES

Ref: (a) OPNAVINST 3710.7R
(b) NAVAIRINST 13034.2
(c) OPNAVINST 4790.2G
(d) NAVAIRINST 4130.1C
(e) NAVAIRINST 5600.5B
(f) NWP 1-01
(g) COMOPTEVFORINST 3511.1

Encl: (1) Information Required for Determination of Flight Operating
Limitations
(2) Flight Clearance Message Request Format
(3) Flight Clearance Process Flow

1. **Purpose.** To establish policy, responsibilities, and procedures for the process within the Naval Air Systems Command (NAVAIR) for granting flight clearances for manned air vehicles.

2. **Cancellation.** This instruction supersedes NAVAIRINST 13034.1A of 6 Sep 95. Since this is a major revision, changes are not indicated.

3. **Scope.** This instruction applies to all manned air vehicle, systems development, systems integration, and in-service programs managed by the NAVAIR, Deputy Commander for Acquisition and Operations (AIR-1.0); the aviation Program Executive Offices (PEO) for Air Anti-Submarine Warfare, Assault and Special Mission Programs (PEO(A)); the PEO for Tactical Aircraft Programs (PEO(T)); and the PEO for Strike Weapons and Unmanned Aviation (PEO(W)). It also applies to all Assistant Secretary of the Navy for Research, Development and Acquisition (ASN(RDA)) designated manned aviation acquisition programs being developed or acquired for U.S. Navy (USN) and/or U.S. Marine Corps (USMC) use.

a. This instruction applies to the issuance of flight clearances and flight operating limitations for manned air vehicle operation, stores and store suspension equipment employment, and Aviation Life Support Systems (ALSS) utilization, whenever the aviation system configuration or flight envelope is nonstandard.

S/N: 0808LD1000557

b. This instruction applies to:

(1) contractor and Navy Developmental Test (DT)/Technical Evaluation (TECHEVAL) of new and modified aviation system configurations, including hardware and software changes, and expansion of flight envelopes;

(2) Operational Test and Evaluation (OT&E), Follow-on Operational Test and Evaluation (FOT&E), and fleet introduction, pending promulgation by the Chief of Naval Operations (CNO) of the Tactical Manual (TACMAN) and Naval Air Training and Operating Procedures Standardization (NATOPS) flight manual; and

(3) fleet operations following modification or envelope expansion, pending promulgation of an approved NAVAIR issued Technical Directive (TD) or change to the NATOPS or TACMAN.

c. Chapter VII of reference (a) stipulates that, "naval aircraft shall not be operated in a nonstandard configuration or outside the limits of NATOPS without airworthiness approval in the form of a flight clearance document from NAVAIR." Paragraph 2.2.2.d. (3) of reference (a) further states that, "Commander, Naval Air Systems Command (COMNAVAIRSYSCOM) has cognizance over all aircraft equipment limitations and configurations."

d. To minimize duplicative effort, the Flight Clearance Process shall utilize Original Equipment Manufacturer (OEM) and Federal Aviation Agency (FAA) data to the maximum extent possible in establishing airworthiness and equipment limitations for commercially derived naval aircraft.

e. The Flight Clearance Process described herein applies to Unmanned Aerial Vehicles (UAVs) when they are carried and/or launched by manned aircraft. Manned flight clearance would apply for carriage of UAVs as stores up to time of separation only. UAVs are stores as defined in paragraph 6.1, and as such the policy of paragraph 5.b.3 applies to them. Reference (b) establishes the airworthiness process for Unmanned Aviation Systems after they have satisfactorily and safely separated from the manned aircraft.

f. This instruction does not supersede or take precedence over the process for formal certification of readiness for DT/TECHEVAL, Operational Test/Operational Evaluation OT/OPEVAL, or recertification for FOT&E required by applicable acquisition directives.

4. Background. NAVAIR, PEO(T), PEO(A) and PEO(W) are responsible for the acquisition, integration, support, and development of naval aviation systems. As weapon systems develop and mature they usually undergo configuration changes and/or expansions of the operational flight envelope. At each step, from first flight through retirement of the platform, airworthiness must be assured and certified by a NAVAIR Flight Clearance. A flight clearance provides temporary flight authorization for an

aviation system operating in a nonstandard configuration/nonstandard envelope, pending promulgation of a TD or change to a NATOPS flight manual or TACMAN. Per reference (c), NAVAIR is the only authority to approve, modify or withhold modification of naval aeronautical equipment. Following reference (c), the Aircraft Controlling Custodian (ACC)/Type Commander (TYCOM) has the authority to modify one Type/Model/Series (T/M/S) aircraft under their command; however, a NAVAIR flight clearance must be obtained to fly an aviation system in that nonstandard configuration. Following reference (a), chapter VII, no USN or USMC aircraft shall be flown in a nonstandard configuration without a naval flight clearance. The Airworthiness Process is not part of the configuration management and control process, and neither process authorizes the other.

5. Policy

a. A flight clearance is required when the aviation system will:

(1) commence its first test flight, and subsequent developmental test flights in nonstandard configurations or operating envelopes;

(2) undergo DT, TECHEVAL, OT, Operational Evaluation (OPEVAL), FOT&E or fleet operations with a preliminary NATOPS; or

(3) operate in the fleet in nonstandard configurations or envelopes not documented by the NATOPS, TACMAN or an approved NAVAIR issued TD/maintenance manual.

b. A flight clearance is valid only for the specific configurations and flight envelopes/operations specified in the clearance. Any change to the specified configuration or flight operation requires issuance of a separate or amended flight clearance. Some examples of configuration and envelope changes requiring flight clearance include, but are not limited to:

(1) structural and material changes;

(2) modification to the exterior contour/mold line of the air vehicle (addition/removal of antenna, wing fence, ventral fin, vortex generator, air induction system, auxiliary inlets, etc.);

(3) carriage and release of stores mixed loads, out of sequence release, or expanded limitations not specifically authorized by TACMAN or NATOPS. This shall include:

(a) deviations in mass properties or external mold line;

1. weight $\pm 5\%$

2. center of gravity (CG) ± 0.5 inches, and

3. inertia \pm 10%

- (b) changes in autopilot software affecting separation characteristics; and
 - (c) changes in structural properties affecting carriage load paths.
 - (4) modification to weapons release/firing system, including stores management system and associated weapons system software;
 - (5) modification to the flight control system, including software revisions;
 - (6) new or modified propulsion system or its control system, including software;
 - (7) modification of the displays, annunciation or critical information presented to the aircrew which may affect situational awareness, aircraft control, weapons launch, etc;
 - (8) installation of equipment, including Non-Developmental Items (NDI) or Commercial-Off-The-Shelf (COTS) systems, mounted to the air vehicle (whether interior or exterior) that is not part of the configuration authorized by NATOPS;
 - (9) modification of any subsystem interfacing with and affecting flight, propulsion, or weapons control, e.g., mission computer, radar, navigation, warning systems, etc;
 - (10) modification of the ALSS;
 - (11) evaluation of crosswind landing or wet runway landing limits, emergency procedures, structural or flight control limits, wind envelopes, dynamic interface limits, or helicopter external lift/cargo hook system/tow limits;
 - (12) flight test instrumentation;
 - (13) intentional operation in degraded mode for test purpose not covered by NATOPS (e.g., simulation of partial loss or malfunction of flight control system, engine, avionics, etc.);
 - (14) use of a flight test technique or procedure that produces an aviation system response that is not representative of fleet operations or previous approved flight test techniques.
- c. A flight clearance does not:
- (1) authorize operation of the aviation system;
 - (2) authorize modification of the aviation system;
 - (3) authorize installation of equipment;

- (4) grant permanent exemption from the formal NAVAIR configuration management process defined in reference (d);
 - (5) constitute a safety review;
 - (6) indicate adequate sponsorship/funding;
 - (7) assign aircraft or authorize aircrews;
 - (8) guarantee the modification or aviation system will perform its intended function;
- or

- (9) indicate adequate logistics support.

d. The threshold for the requirement for a flight clearance is release of brakes and/or application of take-off power, high-speed taxi, or forward motion of the catapult for catapult assisted take-off. For rotary wing and tilt rotor aircraft, the threshold is engagement/turning of rotors.

e. A flight clearance will be issued only for an aviation system owned or leased by the USN or USMC. Only by exception, will a flight clearance be issued for a nonstandard aviation system on a non- Navy aircraft.

f. Airworthiness certification is a product of the engineering development effort and the airworthiness process shall commence with the creation of a program and the inception of an Integrated Program Team (IPT) or Externally Directed Team (EDT).

g. A flight clearance is always temporary and shall expire upon completion of a given event or time as determined by the issuing flight clearance authority.

h. For developmental flight testing requiring a flight clearance for an aviation system which is a fleet asset, prior authorization by the ACC is required.

i. Conflict shall be resolved at the lowest level possible, with Research & Engineering (AIR-4.0) providing final adjudication.

6. Definitions

a. Airworthiness Process. For the purposes of this instruction, it is the process by which an engineering analysis is performed to determine that an aviation system and/or its component parts meets minimum design criteria, standards, and configuration for conduct of safe flight operations.

b. ACC. An administrative function within major commands exercising administrative control of assignment, employment, and logistic support of Navy aircraft and engines, as assigned by the CNO.

c. Aircraft Reporting Custodian (ARC). An administrative function, assigned by the ACC, at the lowest organizational level to account for and provide information about assigned aircraft or support equipment. This does not necessarily imply or require physical custody.

d. Aviation Life Support System (ALSS). Equipment required for aircrew to operate aircraft and for aircrew flight safety including aircraft escape system, special environmental protective system, personal parachute system, aviator's personal protective and survival equipment, aircrew mounted mission systems (e.g., night vision goggles), search and rescue gear, and aircraft fixed seat system.

e. Aviation System. A fixed wing, rotary wing, tilt rotor craft or vertical/short takeoff and landing air vehicle, including onboard hardware and software, equipped with or without stores. Store configuration is part of the aviation system.

f. Commercial Derivative Aircraft/Aviation System. Any available new or used aircraft of any origin having a basic design which can be adapted to perform specific Navy operational or non-operational missions and which has been previously, officially certified for specific missions by the FAA or equivalent agencies (for aircraft not developed, certificated, and/or manufactured in the United States of America).

g. National Airworthiness Team (NAT). Represents the cross competency group of empowered personnel dedicated to the processing, tracking, and issuance of NAVAIR Flight Clearances. Heading this group is the military Flight Clearance Officer (FCO) and his/her civilian deputy. The FCO empowers individuals to sign flight clearances at diverse levels of authority according to their experience and abilities. They are referred to as Flight Clearance Release Authorities (FCRA's). These empowered FCRA's exist at various NAVAIR sites as required for convenience and operational efficiency. The empowered personnel at various NAVAIR sites, in conjunction with the NAVAIR Airworthiness Office (AIR-4.0P) constitute the NAT.

h. Flight Clearance. Temporary approval for flight of an aviation system in a nonstandard configuration or operation outside the envelopes defined in NATOPS and TACMAN's. The flight clearance is evidence that an independent engineering assessment of airworthiness has been performed, and the assessment indicates the aviation system can be operated with an acceptable level of technical risk.

i. Flight Clearance Facilitator. Individual tasked to assist in development and progression of the draft flight clearance as the document advances through the engineering review of airworthiness.

j. FCO. Military head AIR-4.0P of the NAT at NAVAIR.

k. Nonstandard Configuration/Operating Envelope. Any aviation system configuration, including onboard avionics and software, or operating envelope not authorized by the NATOPS, TACMAN, maintenance manuals or an approved NAVAIR issued TD.

l. Store. Any device carried internally or externally and mounted on suspension and release equipment (or air vehicle structure), whether or not the device is capable of being separated in flight from the aviation system. Examples of aviation system stores are as follows: a UAV (carried/launched from another air vehicle), missile, rocket, bomb, mine, torpedo, pyrotechnic device, sonobuoy, fuel tank, pod (gun, refueling, electronic-countermeasures, etc.), tow target reel or similar items.

m. Suspension Equipment. A device such as a rack, adapter, missile launcher or pylon used for store carriage, employment and/or jettison.

7. Responsibilities

a. Reference (a) assigns NAVAIR cognizance over all aviation system equipment operating limitations and technical data. This cognizance is delegated to the appropriate departments under the purview of AIR-4.0. AIR-4.0 has the responsibility to promulgate operating limitations and technical data by issuing a flight clearance whenever the aviation system configuration or operating envelope is nonstandard.

b. The NAT is the single point of contact for the issuance of flight clearances and interim changes to NATOPS and TACMAN's for all naval aviation systems. Additionally, the NAT is responsible for:

(1) establishment of standards for, and the certification of NAT personnel; establishment of standards and selection criteria to empower members of NAVAIR, in part or in whole, to assess airworthiness and issue flight clearances;

(2) approval and oversight of the processes used to issue flight clearances;

(3) maintaining the database, files and records of all flight clearances issued for NAVAIR;

(4) providing guidance and support to the aviation system IPT in planning and coordinating the development of an information management plan to identify the engineering data required to result in the timely issuance of a NAVAIR Flight Clearance;

(5) establishing necessary reviewing competencies for individual flight clearances;

(6) acting as engineering lead for planning meeting and co-signing minutes; and

(7) assuring proper engineering has been accomplished and all applicable processes have been followed prior to issuing clearance.

c. Specific individuals of NAVAIR, identified by the FCO, are empowered, in part or in full, to issue flight clearances. The level of empowerment and authorization to manage the airworthiness process is defined in the individual "Empowerment Letter" signed by the FCO. The airworthiness process, as described herein, shall be adhered to consistently throughout NAVAIR.

d. The IPT/EDT leader is responsible to implement the airworthiness process described herein. IPT leaders shall allocate budget and define the schedule for airworthiness assessments. IPT/EDT leaders are responsible to manage the execution of the process and establish flight clearance priorities within the programs. The IPT shall establish the airworthiness workload and ensure the workload planning system reflects this effort.

e. The IPT/EDT Leader is responsible to establish and maintain lines of communication across the customers and stakeholders during the execution of the airworthiness process and to establish cross competency consensus in the airworthiness assessment. Program Managers, Air (PMA), PEOs, ACCs, NAT, contractors, and the engineering team are all contributors to the success of this process.

f. The IPT/EDT Leader is responsible for developing, funding, and coordinating delivery of required technical data to the engineering review team in support of airworthiness assessment for the flight clearance.

g. NAVAIR engineering competency managers shall establish and document certification requirements for personnel to perform airworthiness assessments. The competency managers shall identify certified talent from the Naval Aviation Systems TEAM (TEAM) to support the IPT and staff the flight clearance engineering review team.

h. NAVAIR Engineering Review Team shall establish the technical data requirements to determine the configuration and operating limitations in the flight clearance. Enclosure (1) lists the types of data typically required for each flight clearance application.

8. Process

a. Sound planning and communication are critical to the successful execution of the airworthiness process and cannot be overstressed. Enclosure (3) describes the airworthiness process and the actions leading to flight clearance approval. For developmental acquisition programs at NAVAIR, the IPT/EDT Leader is a key figure and has the responsibility to ensure the process is adhered to. The process requires the IPT/EDT to establish the engineering review team, execute the engineering review to establish airworthiness, and manage the flight clearance development. The process can

be lengthy and coincides with the non-recurring engineering activities of most development programs. IPT/EDT program plans must account for cost and schedule associated with the process at the outset.

b. Designated member(s) of the IPT/EDT shall release the flight clearance request by naval message (if at a Department of Defense (DoD) activity) or by formal letter to the NAT for tracking and action, with a copy to the PMA and the IPT Leader. The IPT/EDT Leader will determine when the analyses and test results indicate the system is mature enough to warrant a flight clearance request. Identified members of the IPT/EDT shall define aircraft configuration, the flight envelope and any special limitations for use in the flight clearance request message. The ACC must be contacted and must be in agreement with the use of their aircraft assets prior to the IPT/EDT issuing a flight clearance request message. Documentation of this concurrence must appear as a reference in the flight clearance request message. For Research, Development, Test and Evaluation (RDT&E) programs using NAVAIR ACC, (AIR-5.0D) aircraft, the flight clearance request shall be sent to the NAT by the appropriate Test Wing (i.e., Naval Test Wing Atlantic or Naval Test Wing Pacific). Flight clearance requests must adhere to the format of enclosure (2). Electronic Mail (E-Mail) and phone call requests will not be recognized. When the process of enclosure (3) is followed, the flight clearance request should be sent at least 21 days prior to flight clearance need date. When blocks 1-12 of enclosure (3) are not followed, then considerably more time may be required.

c. Flight clearances will be issued via naval message or other NAT approved methods. If previously coordinated, the FCO/NAT may elect to issue flight clearances via telephone facsimile.

d. The NAT appointed representative and IPT/EDT will review the draft flight clearance and determine acceptability of an air vehicle, store, or operating envelope modification for flight and establish flight operating limitations, based upon coordination with NAVAIR competencies and/or activities having technical cognizance of the modification and the aircraft systems/technical disciplines.

e. CNO normally authorizes operating procedures and limitations for new or modified aviation systems to be introduced for fleet operations via formally promulgated NATOPS and TACMANs. Interim operating procedures and limitations may be issued via flight clearance for aviation systems which do not have this CNO authorization.

f. The FCO may elect to issue an interim change to NATOPS or TACMAN in lieu of a flight clearance.

(1) As authorized in reference (d), the FCO will promulgate changes to aircraft equipment limitations and technical data after consultation with the model manager and without further approval provided that no change in operating procedures is involved. Promulgation is achieved via interim change to NATOPS for an urgent change. Interim NATOPS changes, when appropriate, will be prepared by the FCO per reference (e).

(2) Per reference (f), NAVAIR is responsible for the technical data and information contained in the TACMAN's and will promulgate changes to appropriate sections per reference (g), provided no change in operating procedures is involved. Accordingly, the FCO and his/her designated representative will promulgate changes to aircraft operating limitations, stores limitations, weapons fuzing, and minimum arming time criteria.

9. Review. AIR-4.0 shall annually review this instruction and provide recommendations for changes and deletions to the commander.



J. W. DYER

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INFORMATION REQUIRED FOR DETERMINATION OF
FLIGHT OPERATING LIMITATIONS

1. Introduction. The following is a compilation of the data typically required for the determination of flight operating limits for nonstandard aviation system configurations, including proposed store loadings, and expansions to the operating envelope. (This list does not include all possible data requirements for all flight clearance applications, nor are all data listed required for each application. The NAT, in cooperation with cognizant engineers, will determine the applicability and tailor the data requirements for each specific application.)

a. Descriptive (as applicable):

(1) a complete description of proposed modification or operation including aircraft configuration, store loadings, flight envelope, and store carriage/employment/jettison envelope;

(2) three-view drawings including all dimensions, materials, and physical/geometric/kinematics clearances;

(3) air vehicle and stores weight and balance data, and appropriate mass moments of inertia;

(4) air vehicle electrical wiring diagrams;

(5) description of store arming/tail banding wiring configuration;

(6) software version description documents and a listing of associated computer software configuration items;

(7) assembly drawings ALSS;

(8) drawings detailing installation of test instrumentation;

(9) store release/launch event timelines, delays, and activation;

(10) the largest center of gravity shift during a store drop/launch, fuel jettison/burn, or airborne refueling; and

(11) the location of onboard instruments, e.g., angle-of-attack, mach, airspeed, etc.

b. Analysis (reports that details the following, as applicable):

(1) design criteria;

(2) air vehicle loads, store loads, and strength;

- (3) vibrations, flutter, and divergence;
- (4) vibration, thermal, and acoustic fatigue;
- (5) electrical loads;
- (6) the effects on aircraft performance;
- (7) the effects on air vehicle stability and control, including flight control system failure or degraded mode effects;
- (8) stores separation characteristics including miss distances;
- (9) store autopilot or aircraft stability augmentation system function changes; and
- (10) aircraft or store control system mechanism dynamic effects;
- (11) the effects on air vehicle spin and stall recoveries;
- (12) the effects on air vehicle ALSS;
- (13) software change hazard analysis;
- (14) the effects of normal operation and failures of test instrumentation on air vehicle systems, stores and stores employment, and ALSS operation including:
 - a. electromagnetic interference;
 - b. integrity of structures modified for instrumentation installation; and
 - c. physical interference/clearance;
- (15) system safety hazard analysis;
- (16) Hazards of Electromagnetic Radiation to Ordnance (HERO) analysis including restrictions, safe separation distances, and HERO Emission Control bill (per NAVSEA OP 3565); and
- (17) powerplant effects.
- c. Testing (plans and reports that detail the following, as applicable):
 - (1) laboratory and ground testing;
 - (2) air vehicle/stores compatibility (fit check, electrical interface, arming wire/clip/tail band, etc.);

- (3) static ejection and gun/rocket/missile firing;
- (4) store separation and jettison (wind tunnel);
- (5) ground vibration frequency (including ground resonance for rotary wing and rotorcraft) and modal survey;
- (6) electromagnetic effects, including HERO (per NAVSEA OP 3565);
- (7) stability and control, flying qualities, and performance (wind tunnel).
- (8) thermal, vibration, and acoustic fatigue;
- (9) environmental;
- (10) structures static and fatigue;
- (11) aircrew restrictive code effects (per NAVAIRINST 3710.9A, Anthropomorphic Accommodation in Naval Aircraft);
- (12) man-mounted ALSS equipment compatibility/tolerance tests;
- (13) escape system compatibility;
- (14) cockpit lighting/instrument lighting and readability.
- (15) cockpit displays, including software change effects;
- (16) software bench and qualification testing;
- (16) test instrumentation compatibility;
- (17) powerplant effects; and
- (18) cockpit transparencies and transmissivity.

d. In-Flight Testing:

- (1) stores captive carriage;
- (2) store carriage loads;
- (3) stores separation and jettison;
- (4) weapon delivery data (ballistics, safe escape, etc);

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- (5) carrier suitability (catapults and arrestments);
- (6) flutter and divergence;
- (7) acoustic and vibration environment;
- (8) loads and stress survey;
- (9) electromagnetic compatibility/electromagnetic interference;
- (10) flying qualities, and stability and control;
- (11) aircraft Performance;
- (12) engine, transmission, auxiliary power unit, and cross shaft performance;
- (13) escape/egress system compatibility;
- (14) cockpit displays;
- (15) flight controls, including software change effects;
- (16) effects of forward firing ordnance on engine operation, including surge and restart envelope;
- (17) software, including effects on cockpit displays; and
- (18) air vehicle subsystems performance.

FLIGHT CLEARANCE MESSAGE REQUEST FORMAT

FROM: (IPT or Aircraft Controlling/Reporting Custodian as appropriate.)

TO: COMNAVAIRSYSCOM PATUXENT RIVER MD //4.0p//

INFO: COMNAVAIRLANT, COMNAVAIRPAC, COMNAVAIRESFOR, CNATRA,
or COMNAVAIRSYSCOM (Aircraft Controlling Custodian)

INFO: COMNAVAIRSYSCOM PATUXENT RIVER MD (for fleet request)//4.0X//

(security classification) //N13034//

SUBJ: FLIGHT CLEARANCE REQUEST FOR (air vehicle or air vehicle/store system)

(references, as applicable)

RMKS/1. REQUEST FLIGHT CLEARANCE FOR (scope and purpose, system identification, store nomenclature, aircraft BUNO and type/model/series, specific test program, as applicable)

2. TAKEOFF CONFIGURATION: (takeoff configuration: what stores, which stations, as applicable)

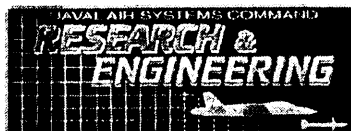
3. REQUESTED LIMITS/FLIGHT ENVELOPE: (limits/flight envelope requested: airspeed, altitude, mach number, acceleration, dive angle, store carriage/release, nonstandard limits, as applicable)

4. DATA: (supporting data identification/location/availability: engineering/test/simulation data, existing documentation such as proposed RAMEC/ECP/etc., test plan/AIRTASK/reason for flight test; should reinforce the engineering/data requirements agreement plan)

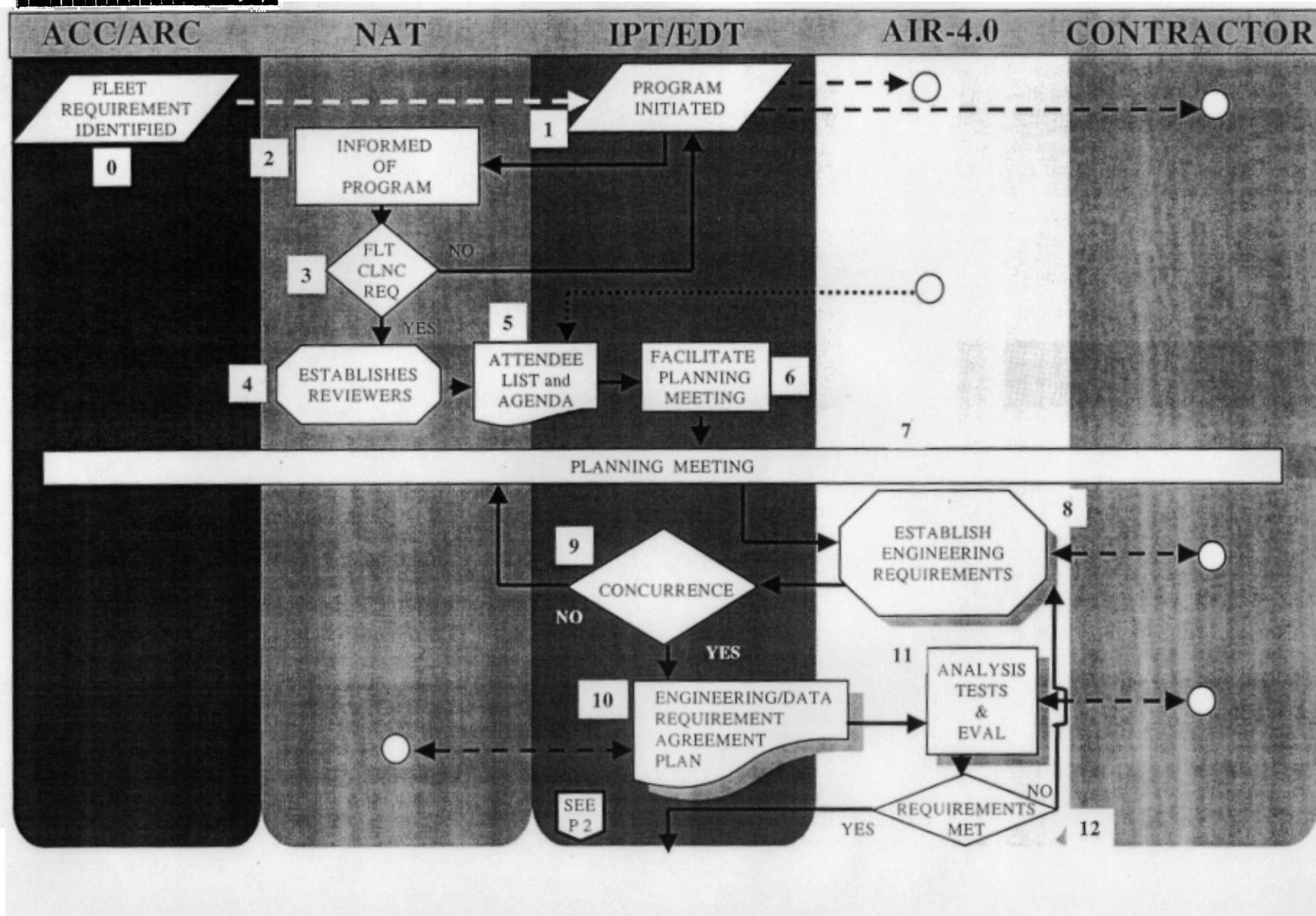
5. (period requested: need date for clearance, expiration date)

6. (points of contact/names/phone numbers: requester, other coordinators, NAVAIR cog if known)

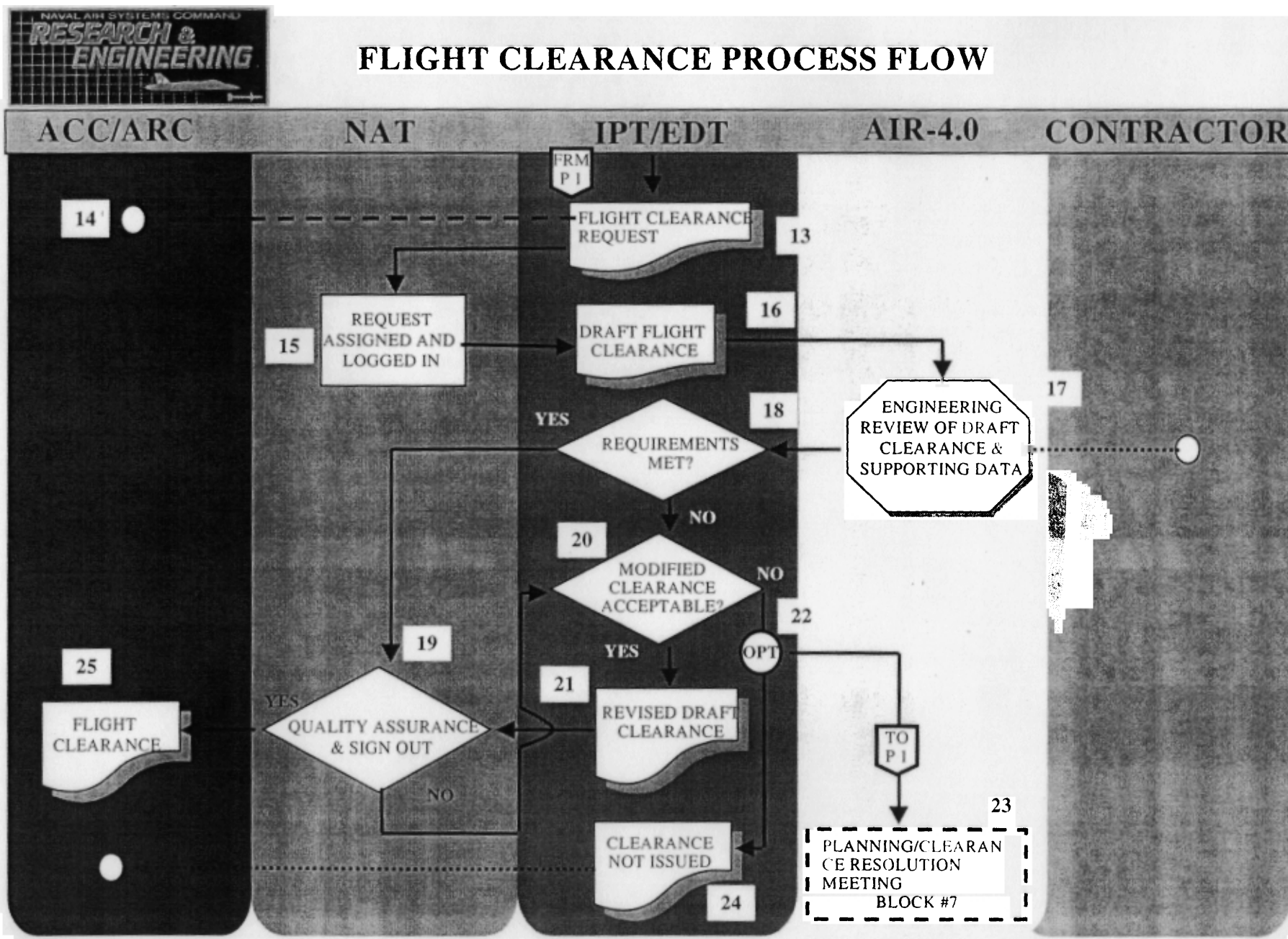
7. (other remarks/comments: whatever else will help get the clearance approved such as additional supporting data/information on the purpose and considerations for the flight, descriptions/comparisons with similar configurations or tests or limits or similar operations).



FLIGHT CLEARANCE PROCESS FLOW



FLIGHT CLEARANCE PROCESS FLOW



**NARRATIVE
FOR
FLIGHT CLEARANCE PROCESS FLOW CHART**

1. Fleet Requirement Identified (Block 0)

CNO authorizes operating procedures and limitations for new and/or modified aviation systems introduced for fleet operations via formally promulgated NATOPS and TACMANs. CNO recognizes there are organic fleet requirements identified, outside the NAVAIR developmental acquisition world, that necessitate operation of fleet assets in a non-standard configuration or outside the envelopes documented by the NATOPS, TACMAN, or approved NAVAIR issued TD. Engineering assessment for fleet operations following aircraft modification or desired envelope expansion will begin by communication between the ACC/ARC or requirements generator and the IPT so the IPT leader can initiate the NAVAIR Flight Clearance Process.

2. Program Initiated (Block 1)

This is the entry point and beginning of the NAVAIR Flight Clearance Process. If there is a requirement to modify an aircraft for flight (hardware and/or software) into a non-NATOPS configured aircraft or change operating limits, change external configuration, modify/change personal flight equipment, or modify an external store, then proceed to Block 2. If the program does not originate from a platform IPT leader, then the platform IPT(s) must be notified concurrently to provide consensus prior to proceeding. The IPT/EDT leader should always coordinate with other platform/product IPT/EDT leaders as required. If concurrence is not granted by the platform IPT leader, the ACC/ARC or requirements generator will be informed by the IPT/EDT leader and the Airworthiness Process will not be undertaken.

3. NAT Informed of Program (Block 2)

The IPT/EDT leader provides the NAT with enough information to determine if a flight clearance is required.

4. Is Flight Clearance Required? (Block 3)

The NAT, based on the IPT/EDT leadership briefing, determines if a flight clearance is required. If a flight clearance is not required, the NAT informs in writing the IPT/EDT leader to proceed without one. If a flight clearance is required, then proceed to Block 4.

5. Establishes Reviewers and Agenda (Block 4)

The NAT determines the initial technical expertise (which competencies) required for review of the proposed flight clearance request and the proposed flight clearance.

6. Attendee List/Agenda (Block 5)

The NAT informs the IPT/EDT leadership in writing of the required competencies that will need to review the flight clearance request and the flight clearance. The IPT/EDT leadership (with platform IPT/EDT leadership if required) negotiates with engineering competency leadership to determine the required reviewers and attendee list. The attendee list must include the required reviewers. Designated attendees submit recommended agenda items. IPT/EDT leadership finalizes agenda, attendee list, and calls meeting.

7. Facilitate a Flight Clearance Planning Meeting (Block 6)

IPT/EDT leader chairs planning meeting. IPT/EDT leader is in charge of meeting.

8. Planning Meeting (Block 7)

The required reviewers identified in Block 5 must attend the planning meeting. Assigned personnel from the NAT will act as the engineering lead and will be co-signer (along with the IPT/EDT leader) of the planning meeting minutes. The intent of this meeting is to establish the lines of communication and begin the process of developing a complete and detailed understanding of the engineering data required to determine the airworthiness of a system as well as an understanding of the program schedule. It is expected that this will be an iterative process requiring follow-on efforts as program planning matures. The IPT/EDT leader, with support from NAT personnel, shall reconvene the conference at the appropriate interval. The IPT/EDT leader shall maintain a record of the plans, schedules, actions and agreements established in the planning meeting to support the creations of the Engineering/Data Requirements Agreement Plan (E/DRAP).

9. Flight Clearance Process Engineering Requirements (Block 8)

a. At the planning meeting (Block 7), the minimal engineering requirements along with a schedule for the effort and costs are established. The primary participants are the engineers nominated from the competencies, identified by the NAT in Block 4, and contractor personnel as required. Flight clearance engineering requirements are established using the guidance offered by appropriate specifications and standards and individual competency's processes and procedures. Additional descriptive data, analyses, ground tests and flight tests may be identified depending on the maturity of the technology and the assessed airworthiness risk. These requirements may be incorporated into a contractual statement of work or in-house work agreement if concurrence is reached (Block 9).

b. For the engineering team, it is important that all aspects of the program including schedule and cost are presented and understood. The engineering team needs to understand their mutual relationships and what is expected of them including the extent of their deliverable(s). The engineering team also needs to establish the input and output data. Lastly they need to agree on the appropriate review cycle(s) within their ranks and contractor(s) if applicable.

c. A summary of the analyses, ground testing and flight testing to be performed along with the associated input and output data, confidence level of the anticipated results and the

identification of the major reviewers needs to be given to IPT/EDT leadership via informal correspondence.

10. Concurrence (Block 9)

IPT/EDT leadership reviews overall program requirements (including planning meeting discussions and results) and compares with generated engineering requirements established in conjunction with contractor inputs/support in Block 8. If, after review of overall program requirements, the IPT/EDT leader finds the information complete, they will provide their concurrence. If upon review of the overall program requirements, planning meeting results/discussions, and AIR-4.0 established engineering requirements it is still not clear that all necessary details or questions have been completed or answered, the IPT/EDT leader will reconvene a planning meeting with the necessary people to resolve any unanswered details/questions.

11. Engineering/Data Requirements Agreement Plan (E/DRAP) (Block 10)

a. The E/DRAP represents the negotiated written agreement established during the Flight Clearance Planning Conference between the IPT/EDT leader and the competency engineering personnel. The written plan shall contain a detailed description of the engineering data that the competencies require to establish the system airworthiness with confidence. The plan is the responsibility of the IPT/EDT leadership. Any perturbations in the program shall be coordinated with the competency engineering staff and any changes to the engineering program shall be reflected in a revision. The E/DRAP must be re-negotiated to reflect any changes to the engineering program. At a minimum the plan shall contain:

- (1) program description;
- (2) names of the IPT/EDT engineering members and a Point Of Contact (POC) for each subject element (structures, Flying Qualities and Performance (FQ&P), etc.);
- (3) names of the engineering competency personnel determined by IPT/EDT/competency management to have cognizance;
- (4) platform POC;
- (5) engineering program schedule;
- (6) proposed need dates for flight clearances;
- (7) proposed configuration for flight clearances;
- (8) proposed limitations/envelopes for flight clearances;
- (9) identification of flight clearance facilitator for Flight Clearance Process management;

- (10) identification of IPT personnel responsible for the draft flight clearance request;
- (11) data element list required for each technical specialty;
- (12) technical issues of concern/risk items;
- (13) signature page with the IPT/EDT leadership, the NAT representative and the cognizant competency engineers; and
- (14) date of issue (to include a revision numeral, if a revision occurred).

12. Analysis, Tests, and Evaluation (Block 11)

Block 11 entails gathering, analyzing, and evaluating the data and testing required by the E/DRAP. The engineers identified in Block 4 must be involved in this process. Data evaluation or results from some of the testing may generate additional data requirements due to the unknowns that can inevitably materialize. This would require a revision to the E/DRAP. The IPT/EDT leader is responsible to report any deviations from the agreed to plan to the engineering competency members and the NAT. Severe program deviations may require a reconvening of the planning conference to renegotiate the Engineering Data Agreement Plan. Depending on the complexity of the system/modification/subject of the Flight Clearance request, this period may involve substantial interaction within the government and contractor teams.

13. Requirements Met (Block 12)

Each reviewer/engineer will inform IPT/EDT leadership by informal correspondence that requirements have been met or have not been met. If met, then proceed to block 13. If not met, then additional engineering requirements or alternative limits/configurations must be identified and concurred with by IPT/EDT leadership (Blocks 8 and 9). All iterations of Block 11 do not have to be completed to proceed to Block 13.

14. Flight Clearance Request (Block 13)

The IPT/EDT Leader will determine when the analysis, tests, and evaluation of Block 11 are mature enough to warrant a flight clearance request. Members of the IPT/EDT identified in Block 10 shall define aircraft configuration, the flight envelope and any special limitations for use in the request message. A flight clearance request is generated (as described in this instruction) by the IPT/EDT test team and sent to the NAT for action. For RDT&E programs or programs using AIR-5.0D assets, the flight clearance request shall be released by the NAT at the appropriate test wing (i.e., Naval Test Wing Atlantic or Naval Test Wing Pacific). When Blocks 1-12 are followed, the flight clearance request should be sent at least 21 days prior to the flight clearance need date. When flight clearance requests have been sent in without Blocks 1-12 complete, then considerably more time will be required.

15. ACC Concurrence (Block 14)

When the IPT/EDT drafts the flight clearance request in Block 13, the ACC/ARC must be contacted and must be in agreement with the use of their aircraft assets prior to a flight clearance request message being forwarded to the NAT. Documentation of this concurrence must appear as a reference in the flight clearance request message.

16. Request Assigned and Logged In (Block 15)

NAT receives the flight clearance request document, reviews it for thoroughness, checks for any potential configuration problems, and logs it into the NAVAIR Flight Clearance database. The NAT assigns the request to an appropriate flight clearance facilitator for action if one has not already been assigned by the IPT during actions in Block 10.

17. Draft Clearance (Block 16)

The IPT/EDT Leader or their designated flight clearance facilitator, as designated in Block 10, will compose a draft flight clearance document. This initial draft flight clearance will be the document that is routed around to the reviewers for edit as necessary.

18. Engineering Review of Draft Clearance & Supporting Data (Block 17)

Engineering will review the draft clearance and supporting data and either concur or recommend modifications. Each competency-empowered reviewer will execute the processes delineated by the appropriate competency for flight clearance signature, tailored to the specific flight clearance. If all expected data evidence is in place, the turnaround time for this parallel review should be no greater than 10 working days. If the flight clearance arrives without Blocks 1 through 12 completed, then the work that should have been done in Blocks 8 through 12 will have to be done in Block 17 and the event will take significantly longer.

19. Requirements Met? (Block 18)

The IPT/EDT leader will decide if the outcome of the engineering review meets the programmatic requirements. If it does, then proceed to Block 19. If it does not, the IPT/EDT Leader must decide if a modification to the draft clearance is acceptable (Block 20).

20. Quality Assurance and Sign Out (Block 19)

The NAT assures the proper engineering has been accomplished and all of the required competencies agreed upon in Block 4 have reviewed and signed-off on the draft flight clearance. Also, the Plain Language Address Directory (PLAD's), format, and content will be reviewed for completeness. Log books and databases will be checked to make sure that the document is ready for release. If the draft flight clearance has the maturity and fidelity required by the NAT, then the document is signed and the process continues to Block 25. If the NAT feels that additional engineering review is required, then the draft flight clearance will be routed through the

necessary personnel. If modifications are made to the draft flight clearance, then it will be routed back to the IPT/EDT leader for concurrence (Block 20).

21. Modified Clearance Acceptable? (Block 20)

IPT/EDT leader determines whether modifications to the draft clearance are acceptable. If the answer is yes, then proceed to Block 21. However, if after review and discussion with the NAT, it is determined that a modified clearance is not acceptable to the IPT/EDT leadership, then they will proceed to Block 22.

22. Draft Clearance (Block 21)

If the IPT/EDT leadership determines that a modified clearance meets their program needs, then they will generate a revised draft clearance that is routed to the NAT (Block 19) for Quality Assurance (QA) and sign out.

23. IPT/EDT Option (Block 22)

At this point a decision has been made that (1) the data available does not support the flight clearance request or (2) the necessary modifications of the draft flight clearance (modifications to limits, configuration, life cycle, etc.) do not meet customer/program requirements. The IPT/EDT leader must make the judgement and has the option to either proceed with resolution of the issues or to deny the flight clearance.

24. Planning/Resolution Meeting (Block 23 (return to Block 7))

If a decision is made by the IPT/EDT leader to proceed, then the planning meeting of Block 7 should be reconvened to determine a modified E/DRAP.

25. Flight Clearance Not Issued (Block 24)

At this point the IPT/EDT leader is faced with a program/project that cannot be executed and requires a complete rethink in terms of objectives, funding requirements, and schedule. The decision to deny a flight clearance is made. If a fleet asset was to be used, then the ACC/ARC needs to be informed by the IPT/EDT leader of program slip or cancellation. If the program can be repackaged, then the IPT/EDT must repeat the process commencing with Block 1, program initiated, in the Flight Clearance Process Flow Chart.

25. Flight Clearance Issued (Block 26)

The clearance is issued often following guidance/ground rules and the IPT/EDT must now complete the other actions outside of this process for the flight(s) to take place.

- The flight clearance will be issued by the NAT via naval message or equivalent "e-mail" format to the appropriate ACC/ARC. A signed copy may be "faxed" to ARC if urgent and this is considered a valid flight clearance document.

- Formal CNO concurrence must be obtained by the NAT if the new or modified aviation system required for fleet operation does not have CNO authorized procedures via formally promulgated NATOPS and/or TACMANs.
- As a result of this effort, an interim change to NATOPS or TACMAN in lieu of a flight clearance may be issued by the NAT. The NAT will promulgate changes to aircraft equipment limitations and technical data after consultation with the model manager and without further approval provided no change in operating procedures is involved. Promulgation is achieved via interim change to NATOPS for an urgent change. The FCO will prepare an interim NATOPS changes when appropriate. For certain mandatory parts of TACMANs the FCO will promulgate changes provided there are no changes in operating procedures. The FCO will promulgate changes to aircraft operating limitations, store limitations, weapons fuzing and minimum arming time criteria.